



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/542,642

07/19/2005

Ho-Suk Kim

08015.0023

1718

22852

7590

12/11/2008

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP

901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

DAVIS, PATRICIA A

ART UNIT

PAPER NUMBER

4111

MAIL DATE

DELIVERY MODE

12/11/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/542,642	Applicant(s) KIM ET AL.	
	Examiner PATRICIA DAVIS	Art Unit 4111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: ____. |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :7/19/2005; 12/15/2005; 10/15/2007.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in the Republic of Korea on 06/23/2003. A claim for
5 priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the dispenser must be
10 shown and labeled or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate
15 prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for
20 consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Art Unit: 4111

Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

10

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Schilling et al (U.S. Patent No. 6,338,492) (hereinafter “Schilling”).

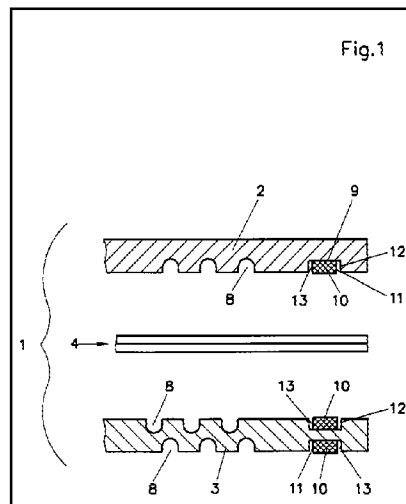
15

1. Regarding claim 1 and 9, Schilling teaches a sealing structure for polymer electrolyte fuel cell comprising: a bipolar plate (2 and 3) with sealing groove (9) to be filled with a rubber dispenser (using an injection process); (see col. 3, lines 48-50) and a gasket (sealing element 10) interposed between said bipolar plate and a membrane electrode assembly (MEA 4; figure 1).

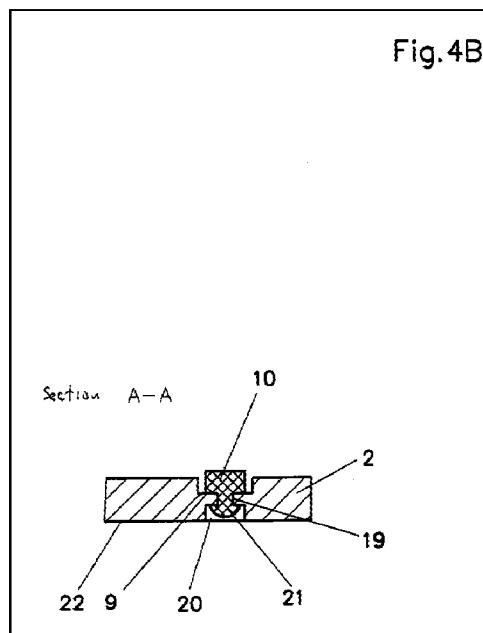
20

Regarding claim 9, Schilling also teaches a polymer electrolyte fuel cell comprising said sealing structure (col. 3, lines 39-60).

Art Unit: 4111



2. Regarding claim 5, as shown in figure 4B, Schilling teaches a sealing structure for polymer electrolyte fuel cell (sealing system; fig. 4B), wherein said anchor (10
- 5 sealing element) is formed vertically to a route direction of said sealing groove (9) in the periphery of said sealing groove (see col. 4, lines 23-35; fig. 4B).



Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

5 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10 Claims 2-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling.

1. Regarding claim 2, Schilling teaches a sealing structure comprising an anchor (10 sealing element) in contact with said sealing groove (9) (col. 4, lines 23-35; figure 4B). Schilling does not specifically teach that the anchor width is greater than the
15 sealing groove.

Consequently, as evidenced by Schilling, the width of the disclosed sealing groove is a recognized known result effective variable whose determination would accordingly have been within the ambit of a person of ordinary skill in the art without undue experimentation. "[W]here the general conditions of a claim are disclosed in the
20 prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (see MPEP § 2144.05).

Therefore, it would have been obvious to a person of ordinary skill in the art to make this modification to optimize the width of the sealing groove to get the proper sealing for the polymer electrolyte fuel cell.

2. Regarding claim 3, Schilling does not specifically teach that the said anchor has
5 a width of 1.5 times the width of the sealing groove. However, it would be known by one with ordinary skill in the art to change the size or proportion of the embodiments to properly seal the structure (col. 4, lines 23-35). In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and
10 the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device (MPEP § 2144.04).

Therefore, it would have been obvious to one with ordinary skill in the art to
15 change the size or proportion to properly seal the structure of the polymer electrolyte fuel cell.

3. Regarding claim 4, Schilling does not specifically teach a sealing structure for a polymer electrolyte fuel cell, wherein said sealing groove (9) and said anchor (10 sealing element) have the same depth (figure 4B).

20 Consequently, as evidenced by Schilling, the depth of the disclosed sealing groove and anchor is a recognized known result effective variable whose determination would accordingly have been within the ambit of a person of ordinary skill in the art

Art Unit: 4111

without undue experimentation. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). The discovery of an optimum value of a known result effective variable, without
5 producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (see MPEP § 2144.05).

Therefore, it would have been obvious to one with ordinary skill in the art to modify the sealing groove and anchor for a polymer electrolyte fuel cell to have the same depth.

10 4. Regarding claim 6, Schilling teaches the sealing structure for polymer electrolyte fuel cell, wherein said anchors (10 sealing elements) on each of said plate (1 single cell) are located in the front of said membrane electrode assembly (see col. 3, line 61- col. 4, line 1; fig. 2).

Schilling does not teach the sealing structures being placed at the rear of the
15 membrane electrode assembly, with the front and rear plates located symmetrically to each other.

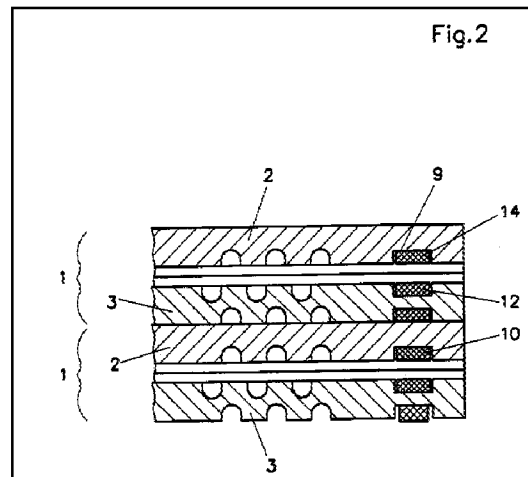
However, the Courts have held that the mere duplication of parts, without any new or unexpected results, is within the ambit of one of ordinary skill in the art. See *In re Harza*, 124 USPQ 378 (CCPA 1960) (see MPEP § 2144.04).

20 By adding more anchors around the periphery of the sealing sites it would be able to absorb more pressure effectively by distributing the pressure uniformly.

Therefore, in this case it would be obvious to one with ordinary skill in the art to add

Art Unit: 4111

anchors to both the rear and front of the membrane electrode assembly and locate them symmetrically to each other (see figure 2).



5 5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling
in view of Sasaki et al. (U.S. Patent No. 6,337,120) (hereinafter "Sasaki").

Regarding claim 7, Schilling does not specifically teach that the type of rubber
used for the sealing structure be made of silicon, fluorine, or olefin.

10 However, Sasaki teaches a rubber silicon material for the sealing structure for
the polymer electrolyte fuel cell (see col. 4, line 48).

The Courts have held that the selection of a known material, which is based upon
its suitability for the intended use, is within the ambit of one of ordinary skill in the art.
See *In re Leshin*, 125 USPQ 416 (CCPA 1960) (see MPEP § 2144.07).

15 Therefore, it would be obvious to a person with ordinary skill in the art to
recognize the use of a silicon rubber material for the sealing structure because of its low
viscosity which makes it easy to inject into the mold (col.4, lines 51-52).

Art Unit: 4111

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling in view of Sakumoto et al. (U.S. Pub. No. 2002/0106954 A1) (hereinafter "Sakumoto").

Regarding claim 8, Schilling teaches a graphite bipolar plate (col. 2, lines 23-24), but does not specifically teach the type of elastic material used for the gasket.

5 However, Sakumoto teaches a carbon gasket (or flange) (see par. 0005 and 0006).

The Courts have held that the selection of a known material, which is based upon its suitability for the intended use, is within the ambit of one of ordinary skill in the art.

See *In re Leshin*, 125 USPQ 416 (CCPA 1960) (see MPEP § 2144.07).

10 Furthermore, the combination of familiar elements is likely to be obvious when it does no more than yield predictable results. See *KSR Int'l v. Teleflex Inc.*, 127 Sup. Ct. 1727, 1742, 82 USPQ2d 1385, 1397 (2007) (see MPEP § 2143).

Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the use of a carbon bipolar plate and gasket to fabricate the sealing

15 structure for the polymer electrolyte fuel cell.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA DAVIS whose telephone number is (571)270-

20 7868. The examiner can normally be reached on 7:30am-5pm EST. Monday-Friday, alternate Fridays off.

Art Unit: 4111

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sines can be reached on 571-272-1263. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

- 5 Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic
- 10 Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

- 15 /Brian J. Sines/
Supervisory Patent Examiner, Art Unit 4111